

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 07-177114

(43)Date of publication of application : 14.07.1995

(51)Int.Cl.

H04J 3/14
H04J 3/08

(21)Application number : 05-321757

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(22)Date of filing : 21.12.1993

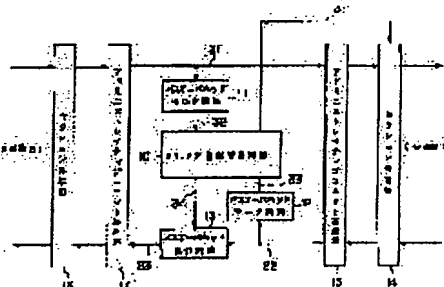
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(54) METHOD FOR TRANSFERRING SWITCHING INFORMATION AND TRANSFER
TRANSMISSION LINE CONVERSION CIRCUIT

(57)Abstract:

PURPOSE: To provide a transmission line conversion circuit for switching information capable of sending the switching information to all stations in the data transmission using an NNI frame.

CONSTITUTION: An NNI frame from a transmission line B becomes a VC signal via a section termination section 16 and an AU termination section 17. The state of a path and Z3, Z4 bytes detected from the VC signal by a monitor circuit 11 are processed into K1, K2 information sets by an information conversion circuit 10, the processed information is inserted to a section overhead at a section termination section 14 and added to the VC signal and the result is sent to a transmission line A. The NNI frame from the transmission line A becomes the VC signal via the section termination section 14 and an AU termination section 15. The section termination section 14 detects the K1, K2 information and a monitor circuit 12 detects the state of the path from the VC signal. The information conversion circuit 10 provides an output of the Z3, Z4 bytes based on the K1, K2 information and the state of the path and an operation circuit 13 inserts the information into the VC signal. The VC signal is sent to a transmission line B via the AU termination section 17 and the section termination section 16.



LEGAL STATUS

[Date of request for examination] 09.08.1994

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number] 2679604

[Date of registration] 01.08.1997

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right] 01.08.2001

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CLAIMS

[Claim(s)]

[Claim 1] The transfer approach of the change information which extracts the change information included in the section overhead (SOH) of the NNI frame which is given from an one direction, and which was defined beforehand, changes this change information into the information in the pass overhead (POH) to the direction of top Norikazu, and is transmitted to said one direction.

[Claim 2] CCITT The NNI frame specified to G.707,708,709 Receive from a transmission line A and a transmission line B, and the virtual container signal (VC signal) which went via the section trailer and the ADOMINISUTOREITI gnat knitting trailer (AU trailer) is passed in the direction of transmission-line A as it is from a transmission line B. A means to operate a pass overhead with the directions from K1 and K2 signal-transduction circuit the middle in the direction of transmission-line B from a transmission line A, A means to carry out the monitor of the pass overhead of the virtual container signal (VC signal) of the direction of transmission-line B by the pass overhead monitor circuit from a transmission line A, and to output to said K1 and K2 signal-transduction circuit, A means to carry out the monitor of the pass overhead of the virtual container signal (VC signal) of the direction of transmission-line A by the pass overhead monitor circuit from a transmission line B, and to output to said K1 and K2 signal-transduction circuit, In said K1 and K2 signal-transduction circuit, information is inputted from said two pass overhead monitor circuits. Moreover, the transfer transmission-line conversion circuit of the change information characterized by the configuration which has the section trailer of a transmission line A, the exchange of K1 and K2 information, and a means to send out information to said pass overhead operation circuit.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention is CCITT. It is related with the transfer approach of change information and transfer transmission-line conversion circuit which are used for the network which communicates using the NNI frame specified to G.707,708,709.

[0002]

[Description of the Prior Art] Generally, a section overhead (SOH), ADOMINISUTOREITI gnat knitting (AU), a virtual container (VC), etc. are contained in the NNI frame, and this constitutes the STM (synchronous transmission mode) frame. Moreover, in VC, the pass overhead (POH) field for specifying pass is prepared. Furthermore, in the cases, such as a failure of a transmission line, in consideration of changing a transmission line, K1 so-called information and K2 information are specified on the NNI frame as change information, and these [K1] and K2 information are arranged as K1 and K2 byte in the section overhead (SOH).

[0003] On the other hand, as a network which communicates using this kind of NNI frame, three stations a, b, and c are mutually connected according to the transmission line which can communicate bidirectionally, and the constituted network can be considered, for example. In this case, usually to each station, the SOH trailer and AU trailer are prepared in the close and appearance side, respectively.

[0004] Here, when it communicates between each station according to the above-mentioned NNI frame, it is only sent [K1 which is change information, and K2 byte] in the network to which Station a and Station b were connected to by the bidirectional transmission line, and Station b and Station c were connected in the bidirectional transmission line and received only between station a-b which counters, and station b-c. This is because only the transmission-line (section) change function is taken into consideration in K1 and K2 byte.

[0005] ~~He is CCITT as described above. Generally in the network according to G.707,708,709, the method which changes a transmission line (section) between opposite equipment (for example, station a-b and station b-c) is realized as an NNI change using K1 in the section overhead (SOH) of the NNI frame, and K2 byte.~~

[0006]

[Problem(s) to be Solved by the Invention] CCITT Change information cannot be directly sent [among 3 offices (transmission equipment)] in the communication network constituted by the transmission-line signal which has the NNI frame structure specified to G.707,708,709 and received like the above-mentioned example between the offices which have not countered (for example, between office a-c). Therefore, in order to realize all transmission lines by section change, it will be necessary to consider as a star-like network, and great plant-and-equipment investment will be needed.

[0007] For this reason, the request of wanting to spread one pair of cables around in the shape of a loop formation in order to suppress plant-and-equipment investment, and to constitute a network by the change of pass at the beginning of construction was strong.

[0008] However, in order to constitute a loop-formation-like network, the equipment of the dedication

①
⑮

which changes pass was needed, moreover, shifting to the section change method which will consider the transmission line itself as doubleness in the future was also considered, and a part of loop-formation network of the above was a problem also with this serious translatability.

[0009] The purpose of this invention is offering the transfer approach of change information and transfer transmission-line conversion circuit which can transmit change information to all offices (transmission equipment), also when the above-mentioned NNI frame is used.

[0010]

[Means for Solving the Problem] According to this invention, the change information included in the section overhead (SOH) of the NNI frame from an one direction is extracted, this change information is changed into the information in the pass overhead (POH) to the direction of top Norikazu, and the transfer approach of the change information transmitted to an one direction is acquired. Thus, speaking concretely, being able to transmit K1 and K2 information not only to opposite equipment but to the equipment which does not counter directly by using the cutting tool in a pass overhead (POH), and transmitting K1 and K2 information. (2-5)

(2)

[0011] Furthermore, according to this invention, he is CCITT. The NNI frame specified to G.707,708,709 Receive from a transmission line A and a transmission line B, and the virtual container signal (VC signal) which went via the section trailer and the ADOMINISUTOREITI gnat knitting trailer (AU trailer) is passed in the direction of transmission-line A as it is from a transmission line B. A means to operate a pass overhead with the directions from K1 and K2 signal-transduction circuit the middle in the direction of transmission-line B from a transmission line A, A means to carry out the monitor of the pass overhead of the virtual container signal (VC signal) of the direction of transmission-line B by the pass overhead monitor circuit from a transmission line A, and to output to said K1 and K2 signal-transduction circuit, A means to carry out the monitor of the pass overhead of the virtual container signal (VC signal) of the direction of transmission-line A by the pass overhead monitor circuit from a transmission line B, and to output to said K1 and K2 signal-transduction circuit, In said K1 and K2 signal-transduction circuit, the transfer transmission-line conversion circuit of the change information equipped with a means to input information from said two pass overhead monitor circuits, and to send out information to the section trailer of a transmission line A, the exchange of K1 and K2 information, and said pass overhead operation circuit is obtained.

[0012]

[Example] Next, this invention is explained with reference to a drawing.

[0013] Drawing 1 is the block diagram showing one example of this invention, and the transfer transmission-line conversion circuit of the illustrated change information is prepared in each transmission equipment which constitutes a network, and shows the case where it has been arranged among the transmission lines A and B which perform bidirectional transmission here. Other equipments in transmission equipment are omitted for simplification of drawing.

(1) [0014] The transmission equipment shown in drawing 1 is equipped with the section trailers 14 and 16 connected with opposite equipment (game) through transmission lines A and B, and the ADOMINISUTOREITI gnat knitting trailers (AU trailer) 15 and 17 connected to each section trailers 14 and 16. The transfer transmission-line conversion circuit of this example is equipped with the pass overhead monitor circuits 11 and 12, the pass overhead operation circuit 13, and K1 and K2 signal-transduction circuit 10.

[0015] If drawing 2 is also referred to, the frame format of STM-N as an NNI frame transmitted on each transmission lines A and B is shown, and the format which consists of nine trains is shown here. Each train contains the pointer of 9-N byte a section overhead (SOH) or N individual other than a byte of 261-N real information (payload). In a section overhead (SOH), it turns out that K1 as change information and K2 information are included.

[0016] on the other hand, virtual to drawing 3 - the frame format of (Container VC)-4 is shown and 1 byte of pass overhead (POH) is prepared in the head of real information (payload).

[0017] If it returns to drawing 1, termination of SOH and AU will be carried out [among STM-N frames as shown in drawing 2 from a transmission-line B side] by the section trailer 16 and the

ADOMINISUTOREITI gnat knitting trailer (AU trailer) 17, respectively. As a result From the ADOMINISUTOREITI gnat knitting trailer (AU trailer) 17, the virtual container signal (VC signal) is given to the ADOMINISUTOREITI gnat knitting trailer (AU trailer) 15 and the pass monitor circuit 11 by the side of a transmission line A with the signal line 21.

[0018] Similarly, termination also of SOH and AU from a transmission-line A side is carried out by the section trailer 14 and the ADOMINISUTOREITI gnat knitting trailer (AU trailer) 15, respectively, and a virtual container signal (VC signal) is supplied to the pass overhead operation circuit 13 and the pass overhead monitor circuit 12 with a signal line 22. Moreover, the pass overhead operation circuit 13 and the ADOMINISUTOREITI gnat knitting trailer (AU trailer) 17 are connected by the signal line 23.

[0019] Moreover, K1 and K2 signal-transduction circuit 10 are connected with the pass overhead monitor circuits 11 and 12 and signal lines 32 and 33, and the pass overhead operation circuit 13 is connected by the signal line 34. It connects through the section trailer 14 and signal line 31 by the side of a transmission line A, and K1 and K2 signal-transduction circuit 10 which were illustrated have the configuration which can arrange K1 in the transmission equipment concerned, and K2 information in SOH sent out to a transmission line A while detecting K1 in SOH given from the opposite equipment of a transmission line A, and K2 information. Thus, K1 by the side of a transmission line A and K2 information are sent and received between the section trailer 14 and K1 and K2 signal-transduction circuit through a signal line 31.

(3) [0020] K1 by the side of A inputted with the signal line 31 and K2 information are sent out to a transmission line B as K1, Z3 of POH of VC signal as information processed according to the condition of the pass inputted by K2 signal-transduction circuit 10 and the signal line 33 and shown in drawing 3 via the pass overhead operation circuit 13 with a signal line 34, and Z4 byte.

[0021] Moreover, the condition of Z3 received from the transmission line B, Z4 byte, and pass is changed into the signal line 31K1 after being inputted into a signal line 32K1 and K2 signal-transduction circuit 10 and receiving processing, and K2 information, and the section trailer 14 is sent out to the through transmission line A.

[0022]

[Effect of the Invention] Even if the multiplex inverter which carries out termination of the section overhead of a transmission line B intervenes between the equipment which carries out termination of the signal of a transmission line A since K1 in the section overhead from a transmission line A and K2 information can be changed and transmitted to the cutting tool in the pass overhead of a transmission line B as explained above, activation of an NNI change is attained between the equipment which carries out termination of the signal of a transmission line A.

[0023] Therefore, when it constitutes a loop-formation-like network, the circuit of this invention is installed between the equipment which performs an NNI change, and in the case of a star-like network, the circuit of this invention is only deleted, and it is that both of the networks can be constituted, without changing the equipment which performs an NNI change.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The block diagram of this invention is shown.

[Drawing 2] A STM-N frame format is shown.

[Drawing 3] VC-4 frame format is shown.

[Description of Notations]

11 12 Pass overhead monitor circuit

13 Pass Overhead Operation Circuit

14 16 Section trailer

15 17 ADOMINISUTOREITI gnat knitting trailer (AU trailer)

21, 22, 23 Signal line

31, 32, 33, 34 Signal line

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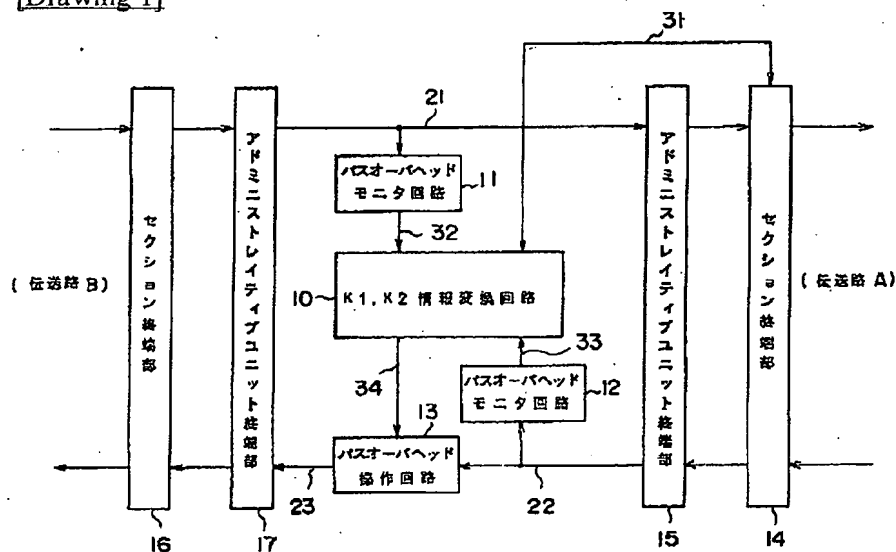
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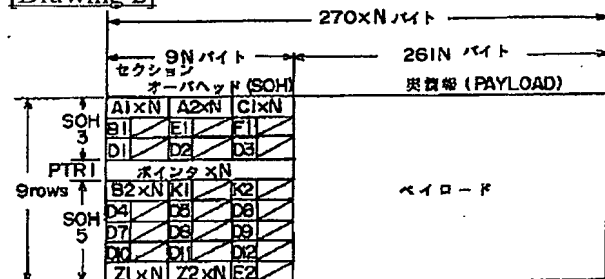
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DRAWINGS

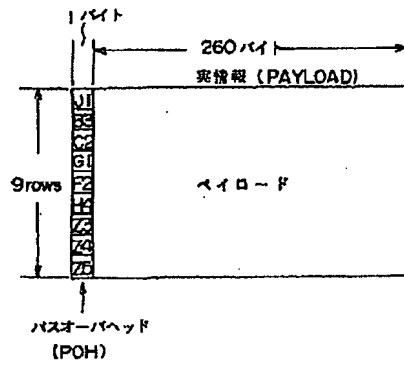
[Drawing 1]



[Drawing 2]



[Drawing 3]



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